

wherein X¹, X², X³ and X⁴ each independently represent an alkoxy group or a halogen

atom,

a hydrolyzate of said silicon compound (I),

a silicone resin,

silicone resin precursor,

and silica; and

(c) a liquid medium;

wherein a ratio of (a) to (b) ranges from 20/1 to 1/1 in terms of moles of titanium atoms in (a)/moles of silicon atoms in (b).

BASIS FOR THE AMENDMENTS

The broadest claims in the case have been limited to require a Ti/Si ((a)/(b)) ratio range of 20/1 to 1/1. Support is found in the paragraph bridging pages 15 and 16 of the specification. See also Claim 2.

Claim 2 has been canceled accordingly.

No new matter is believed to be added by the amendments. Upon entry of the amendments, Claims 1 and 3-24 will be active and in condition for allowance. Entry and favorable consideration are kindly requested.

REMARKS

Applicants thank Examiner Jagoe for considering all the Information Disclosure Statements submitted to date and for acknowledging receipt of Applicants' foreign priority documents and Applicants' claim to foreign priority. Thus, with the amendments and remarks submitted herein, this case is ready for allowance.

The rejection over GB 2,257,439 to Patel (GB '439) is obviated by amendment. The claims have been limited to a particular Ti/Si mole ratio, which mole ratio is not disclosed or suggested in the GB '439 reference.

The present inventors have found that a composition having the claimed Ti/Si molar ratio, which ranges from 20/1 to 1/1, both retards the formation of dental plaque and even decomposes dental plaque. The Ti/Si ratio is quite high when compared to the GB '439 reference. Indeed, GB '439 discloses at page 3, lines 28-33:

“Preferably one or more metal alkoxides are present capable of participating in forming glassy mixtures with the silicic ester, such as sodium, zirconium, aluminum or titanium alkoxide singly or in any combination, such as Si+Al+Ti+Na or Si+Zr+Na, with all these metals (not counting Na) being present in preferred amounts of up to 20%.” (Emphasis added).

The reference goes on to state at page 7, lines 14-24:

“There are certain preferred ranges of compositions of the sol-gel. Considering atoms of Si, Na (or equivalent), Al, Zr and Ti (or equivalent), silicon preferably accounts for at least 30, more preferably at least 40%....and Gp VB and IVB, such as titanium and/or zirconium and/or vanadium and/or niobium and/or tantalum 3-15%, more preferably 5-10%, and/or not exceeding one sixth of the silicon.” (Emphasis added).

Such disclosures do not point one to high Ti/Si mole ratios such as claimed. Indeed, the reference teaches that the titanium, if present, is present in an amount of 3-20% that of silicon, which is far less than what is claimed.

None of the examples in GB '439 have Ti/Si mole ratios within the claims. Applicants kindly point out Examples 7 and 9 in the GB '439 reference, which (based on Applicants' calculations, provided upon request) have Ti/Si mole ratios of 0.14 (Example 7) and 0.3 (Example 9). Neither of these examples have a Ti/Si mole ratio of 20/1 to 1/1 such as claimed.

Accordingly, instead of the claimed Ti/Si molar ratios, GB '439 teaches that much lower Ti/Si mole ratios are better. For these reasons, and in view of the claim amendments,

the claims are not anticipated by the reference. For the same reasons, the present invention is not made obvious by GB '439, were such a rejection contemplated by the Office. Applicants kindly request that the rejection be withdrawn.

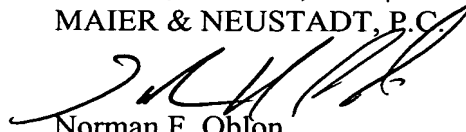
The objection to the incorporation by reference is noted. Applicants kindly point out that the JP application in question on page 29, lines 11-13 of the specification, is the priority document for the present U.S. case. This incorporation by reference of the foreign priority document is proper. See, e.g., MPEP §608.01(p)(I)(B) on MPEP pp. 600-80 (August, 2001). Applicants kindly request that the objection to the specification be withdrawn.

Applicants acknowledge their previous election of Claims 1-12 and 21-22 with traverse. Applicants kindly request the Examiner to consider rejoining the non-elected subject matter with the elected group should she deem that the elected subject matter is allowable. If the Examiner deems that restriction is still required, however, Applicants would consider canceling the non-elected claims upon request.

This application is now in condition for allowance. An early and favorable indication of same is earnestly solicited.

Respectfully submitted,

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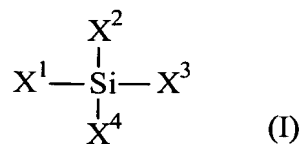
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Amendment Filed on:
HEREWITH

IN THE CLAIMS

--1. (Amended) A composition, comprising:

- (a) a photocatalytic titanium oxide or a photocatalytic titanium oxide precursor;
- (b) at least one selected from the group consisting of:

a silicon compound having the following formula (I):



wherein X^1 , X^2 , X^3 and X^4 each independently represent an alkoxy group or a halogen atom,

a hydrolyzate of said silicon compound (I),

a silicone resin,

silicone resin precursor,

and silica; and

- (c) a liquid medium;

wherein a ratio of (a) to (b) ranges from 20/1 to 1/1 in terms of moles of titanium atoms in (a)/moles of silicon atoms in (b).

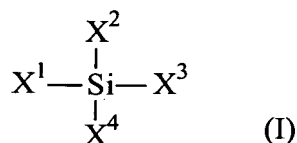
2. (Canceled).

24. (Amended) A method for preparing a dental and orologic composition, comprising admixing:

(a) a photocatalytic titanium oxide or a photocatalytic titanium oxide precursor;

(b) at least one selected from the group consisting of:

a silicon compound having the following formula (I):



wherein X¹, X², X³ and X⁴ each independently represent an alkoxy group or a halogen atom,

a hydrolyzate of said silicon compound (I),

a silicone resin,

silicone resin precursor,

and silica; and

(c) a liquid medium;

wherein a ratio of (a) to (b) ranges from 20/1 to 1/1 in terms of moles of titanium atoms in (a)/moles of silicon atoms in (b).--